

SITE NEED STATEMENT

General Reference Information

Need Title: Improved Detection/Characterization of Rad Contamination on Concrete and Other Large Surfaces

Need Code: NV10-0101-11S

Need Summary: Cost-effective technologies are needed to detect and characterize radioactive contamination on large, uneven concrete and metal surfaces at Decontamination & Decommissioning (D&D) facilities. Current characterization methods rely on hand survey using alpha and beta/gamma alpha meters, which is labor intensive and costly.

Origination Date: January 1, 2001

Need Type: Technology Need

Operations Office: DOE/NV

Geographic Site Name: Nevada Test Site

Project: NV214/Industrial Sites

National Priority: Medium

Operations Office Priority: 11 of 12

Problem Description Information

Operations Office Program Description: The DOE/NV Environmental Restoration Program encompasses activities that assess the degree of contamination resulting from the testing program at the Nevada Test Site, the Nellis Air Force Range, the Tonopah Test Range, and eight offsite locations, and performs actions required by federal and state regulations. The objects of the Program are to: (1) identify the nature and extent of the contamination, (2) determine its potential risk to the public and the environment, and (3) perform the necessary corrective actions in compliance with applicable regulatory guidelines and requirements.

Need/Problem Description: Cost-effective technologies are needed to detect and characterize radioactive contamination on large, uneven concrete and metal surfaces at Decontamination & Decommissioning (D&D) facilities. Current characterization methods for these surfaces rely on hand survey using alpha and beta/gamma meters, which is labor intensive and costly. Survey needs do not require 100% coverage.

Functional Performance Requirements: The requirements for this technology include:

- A portable system
- The ability to identify radioactive contamination on smooth and uneven concrete and metallic surfaces, although the technology could involve only gross alpha and beta counting (the radioisotopes of primary concern are cobalt, cesium, plutonium, and uranium).
- Possess real time data collection and a direct downloading capability
- The ability to link gross alpha and beta counts to a grid system adaptable to any size surface
- A cost reduction of at least 35% from current D&D characterization estimates.

Definition of Solution: One solution is the Surface Contamination Monitor (SCM), Technology ID 1942 , deployed at the NTS in FY 2000. Although a 100 percent survey was not required, the SCM performed well on flat concrete surfaces. The In Situ Object Counting System (ISOCS), Technology ID 2098, may also be effective on large surfaces and is planned for deployment at the NTS.

Targeted Focus Area: Decontamination and Decommissioning

Potential Benefits: Efficient, less labor intensive survey resulting in cost savings and reduced potential of worker exposure

Potential Cost Savings: A range of cost savings in the area of \$210 K is estimated if 100 percent, free release surveys were required. However, at this time free-release surveys are not required.

Potential Cost Savings Narrative: For large areas requiring surveys, cost savings can result from technologies that require less labor-intensive survey work and more efficient means of data collection and analysis. Sampling programs using proven remote detection technologies will result in a significant reduction in the number of physical samples and analyses and will produce cost savings.

Technical Basis: The baseline alternative using hand held meters and manual data transfer is extremely time and labor intensive.

Cultural/Stakeholder Basis:	Radioactive contamination or residual following cleanup is characterized to ascertain its potential impact on the environment and potential future receptors.
Environment, Safety, and Health Basis:	Potential reduction in risk of exposure to workers.
Regulatory Drivers:	Faster characterization would allow for the acceleration of corrective actions included in the regulatory agreement.
Milestones:	Not applicable
Material Streams:	LLW contaminated D&D rubble and liquid (1025). Technical risk score 3. Not on critical path to closure.
TSD System:	Area 3/5 RWMS disposal (461)
Major Contaminants:	Cobalt, cesium, plutonium, and uranium
Contaminated Media:	LLW Contaminated D&D rubble & liquid (1025)
Volume/Size of Contaminated Media:	Varies with specific CAU
Earliest Date Required:	2001
Latest Date Required:	2006

Baseline Technology Information

Baseline Technology Process:	Survey using alpha meters, held inches from a surface
Life-Cycle Cost Using Baseline:	Life-Cycle Cost for field investigation ranges from tens of thousands to a few hundred thousands of dollars depending on the specific D&D facility CAU.
Uncertainty on Baseline Life-Cycle Cost:	This project can be completed using the baseline technology, therefore there are no technical risk factors involved in any uncertainty of the life-cycle baseline cost.
Completion Date Using Baseline:	2006

Points of Contact (POC)

Contractor End User POCs:	Brad Jackson, IT Corporation, Project Manager, Industrial Sites Project - Office: 702-295-2144; Fax: 702-295-2025; E-mail: rjackson_it@nv.doe.gov Bob Eastmond, IT Corporation, Technical Consultant, Office: 702-295-2203; Fax: 702-295-1824; E-mail: reastmon_it@nv.doe.gov
DOE End User POCs:	Janet Appenzeller-Wing, DOE, Project Manager, Industrial Sites Project - Office: 702-295-0461; Fax: 702-295-1113; E-mail: wing@nv.doe.gov
